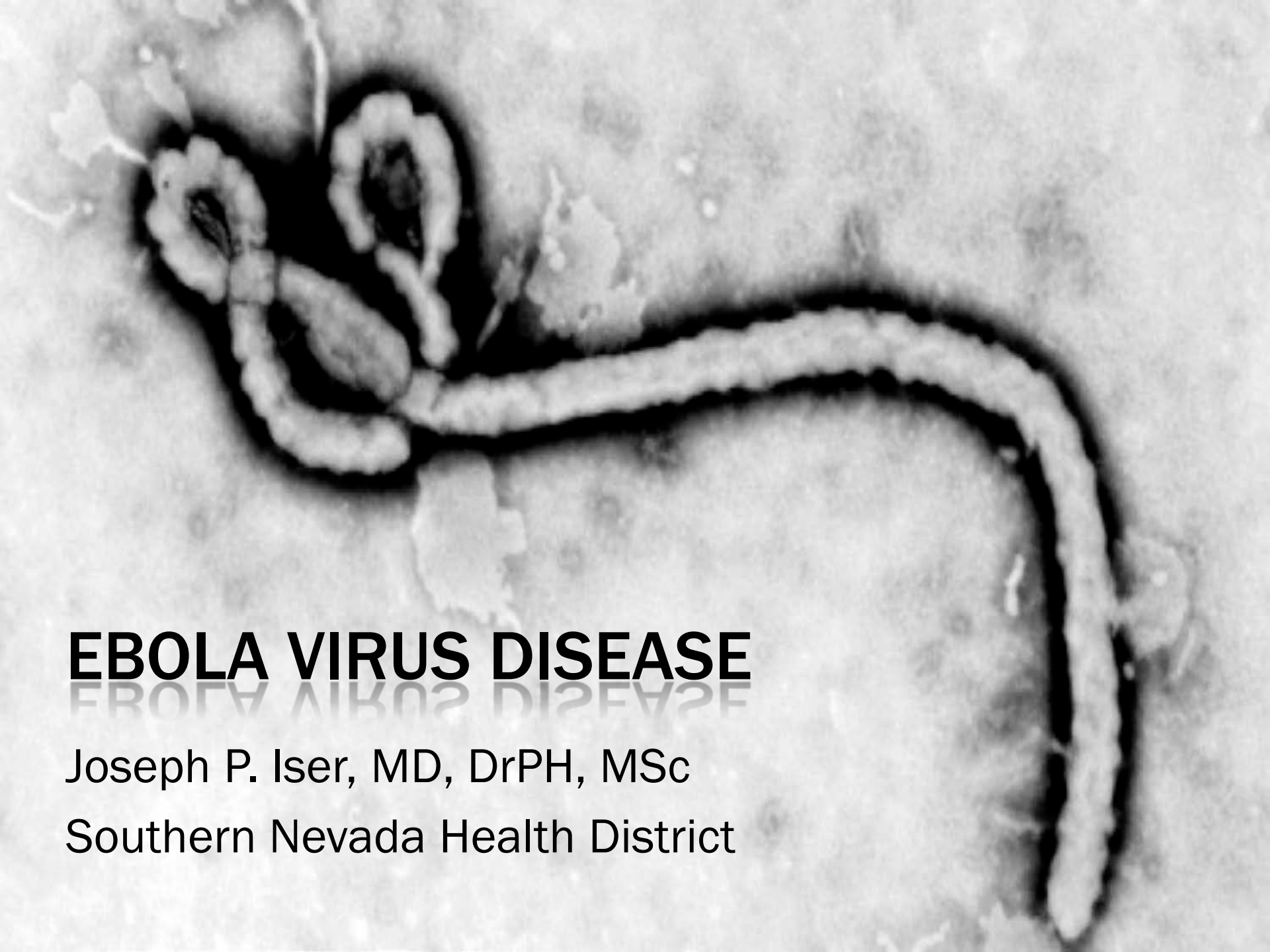

EBOLA VIRUS DISEASE

Joseph P. Iser, MD, DrPH, MSc

Southern Nevada Health District

EBOLA BASICS

Ebola virus

- Causes a viral hemorrhagic fever
- Incubation period 2-21 days, normally 8-10 days
- Not infectious until person is symptomatic

Source: SNHD West African Ebola FAQ - http://www.southernnevadahealthdistrict.org/ebola/faq.php

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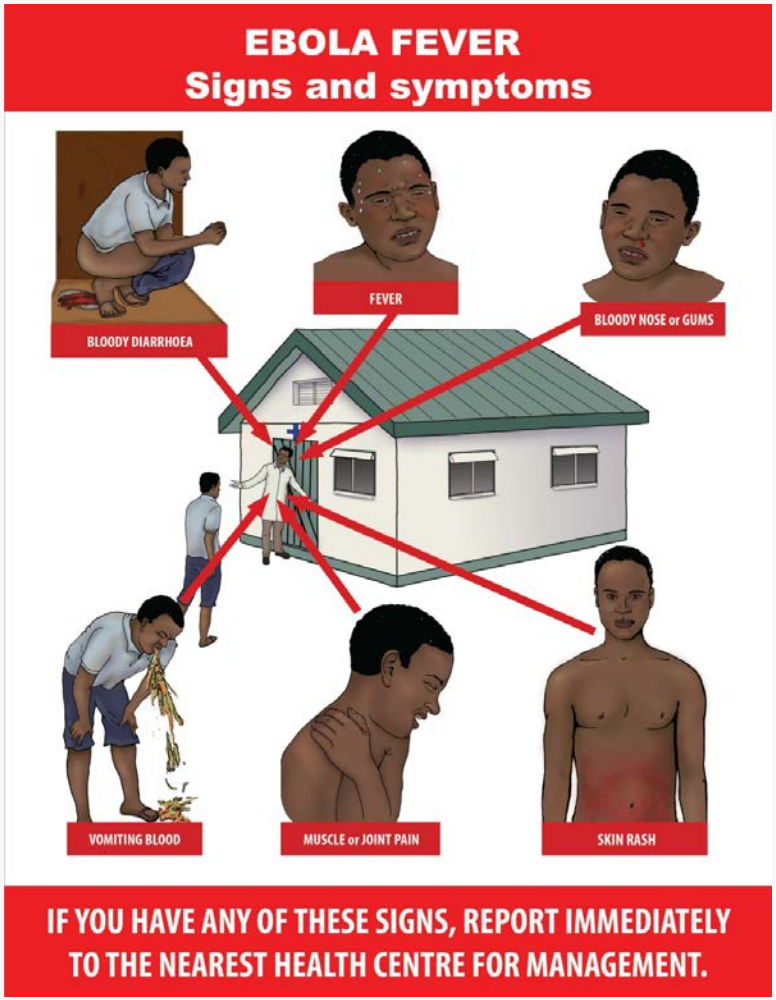
SIGNS AND SYMPTOMS



- Initially: **fever (101.5°F or higher)**, headache, fatigue, sore muscles, sore throat
- Progresses to: diarrhea, vomiting, stomach pain, rash, bleeding
- Symptoms: 2-21 days
- Fatality rate: 25%-90%, normally ~50%

Source: SNHD West African Ebola FAQ - http://www.southernnevadahealthdistrict.org/ebola/faq.php

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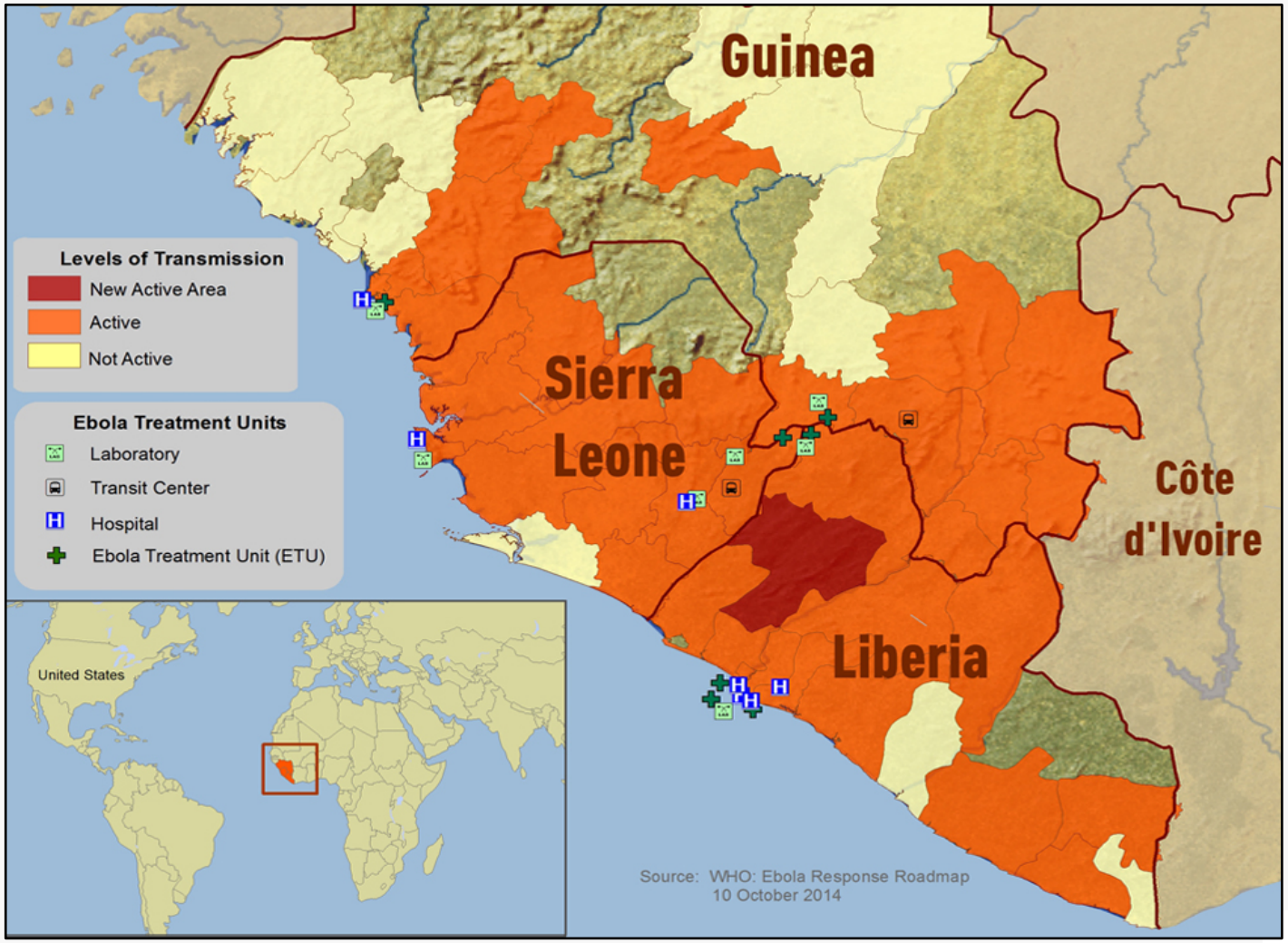
COUNTRIES WITH WIDESPREAD ACTIVITY (THROUGH OCTOBER 10, 2014)



Source: CDC - http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/distribution-map.html

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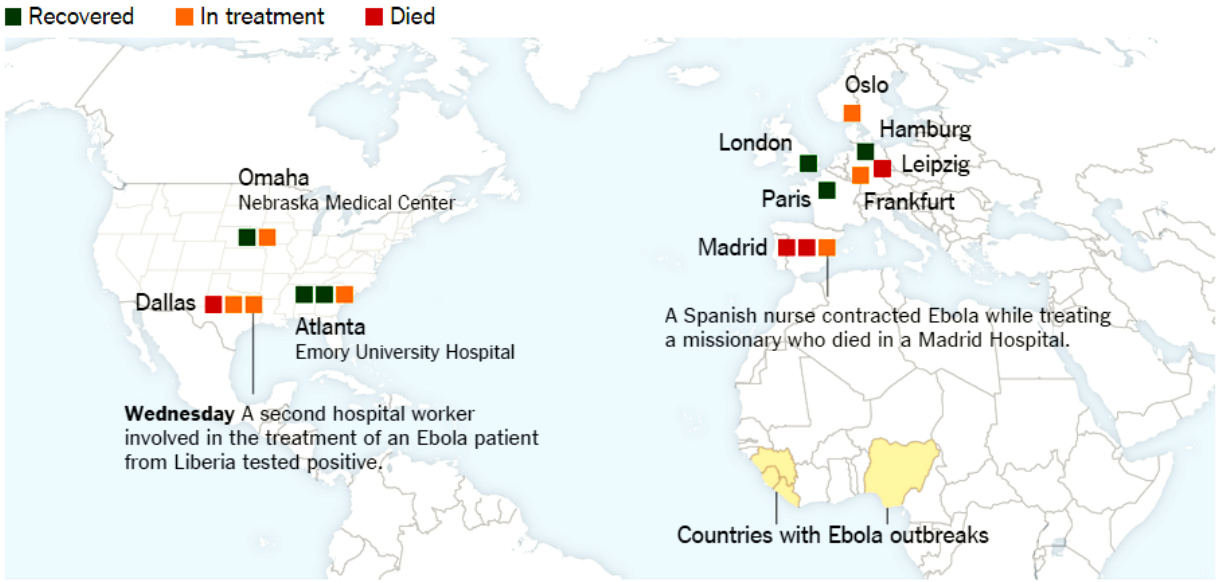
CASES OUTSIDE WEST AFRICA (THROUGH OCTOBER 15, 2014)



Cases of Ebola Outside of West Africa

As of Oct. 15, 2014

United States	Arrival date	
Aid worker	Aug. 2	Recovered
Missionary	Aug. 2	Recovered
Doctor	Sept. 5	Recovered
Doctor	Sept. 9	In treatment
Visitor	Sept. 30*	Died
NBC cameraman	Oct. 6	In treatment
Hospital worker	Oct. 11*	In treatment
Hospital worker	Oct. 14-15*	In treatment

France		
Nurse	Sept. 19	Recovered

Britain		
Nurse	Aug. 24	Recovered

Spain	Arrival date	
Missionary	Aug. 7	Died
Priest	Sept. 22	Died
Nurse	Oct. 6*	In treatment

Germany		
Doctor	Aug. 27	Recovered
Doctor	Oct. 3	In treatment
U.N. medical worker	Oct. 9	Died

Norway		
Aid worker	Oct. 6	In treatment

*Date of Ebola diagnosis.

Source: New York Times: http://www.nytimes.com/interactive/2014/07/31/world/africa/ebola-virus-outbreak-qa.html?_r=0

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CASE COUNTS (DATA THROUGH OCTOBER 15, 2014)

Country	Cases	Deaths	Death Rate
Guinea	1,472	843	57%
Liberia	4,249	2,458	58%
Sierra Leone	3,252	1,183	36%
Nigeria	20	8	40%
Senegal	1	0	0%
United States	2	1	50%
Spain	1	0	0%
Total	8,997	4,493	50%

Source: CDC - http://www.cdc.gov/vhf/Ebola/outbreaks/2014-west-africa/index.html

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TRANSMISSION

- Direct contact with blood or bodily fluids of ill person
- Contact with objects (such as needles) contaminated with blood or bodily fluids of ill person
- Ebola is **not** airborne
- Ebola is not spread through food or water

Source: SNHD West African Ebola FAQ - http://www.southernnevadahealthdistrict.org/ebola/faq.php

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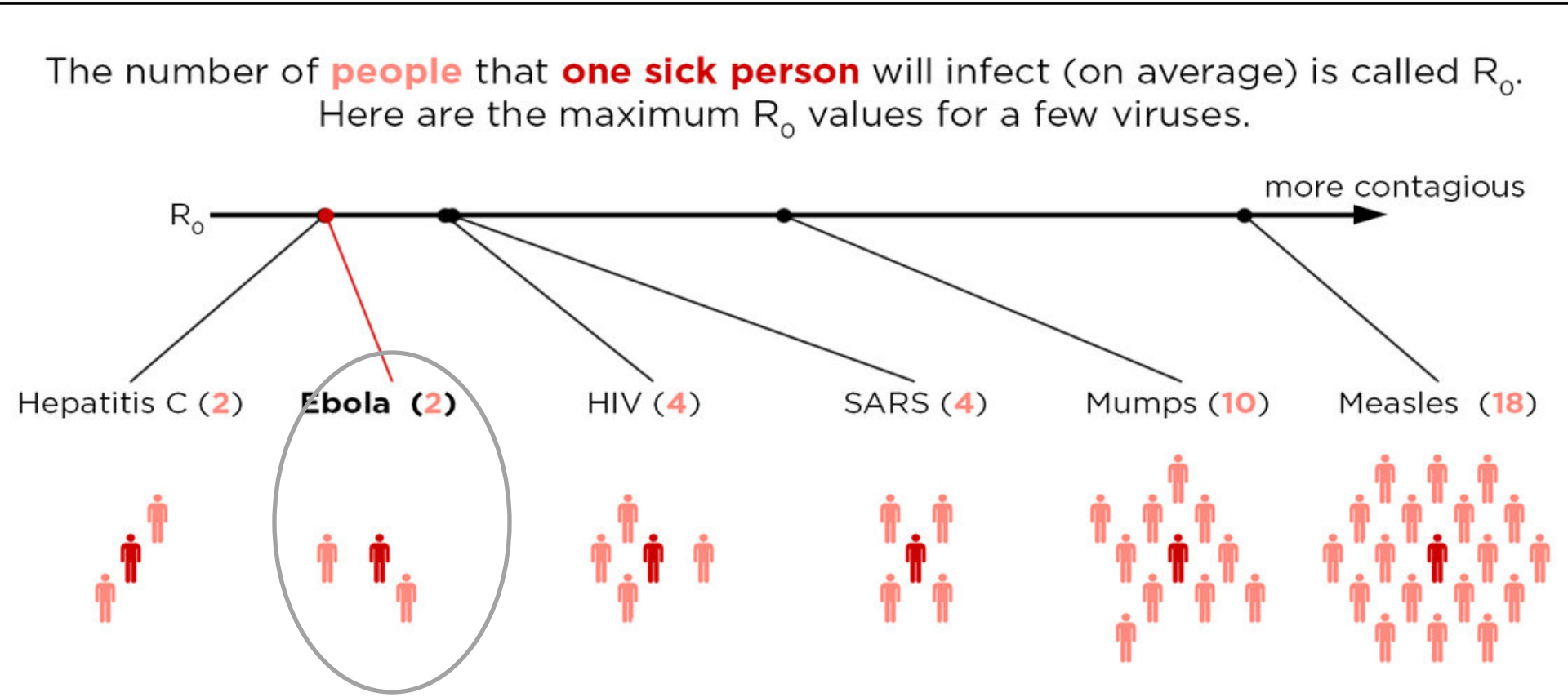
INFECTIOUSNESS



Source: NPR: No, Seriously, How Contagious is Ebola? - http://www.npr.org/blogs/health/2014/10/02/352983774/no-seriously-how-contagious-is-ebola

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TREATMENT

- No Ebola-specific treatment exists
- Ebola does not respond to current antibiotics
- Experimental treatments are being developed but not yet available
- Treatment is supportive

Source: SNHD West African Ebola FAQ - http://www.southernnevadahealthdistrict.org/ebola/faq.php

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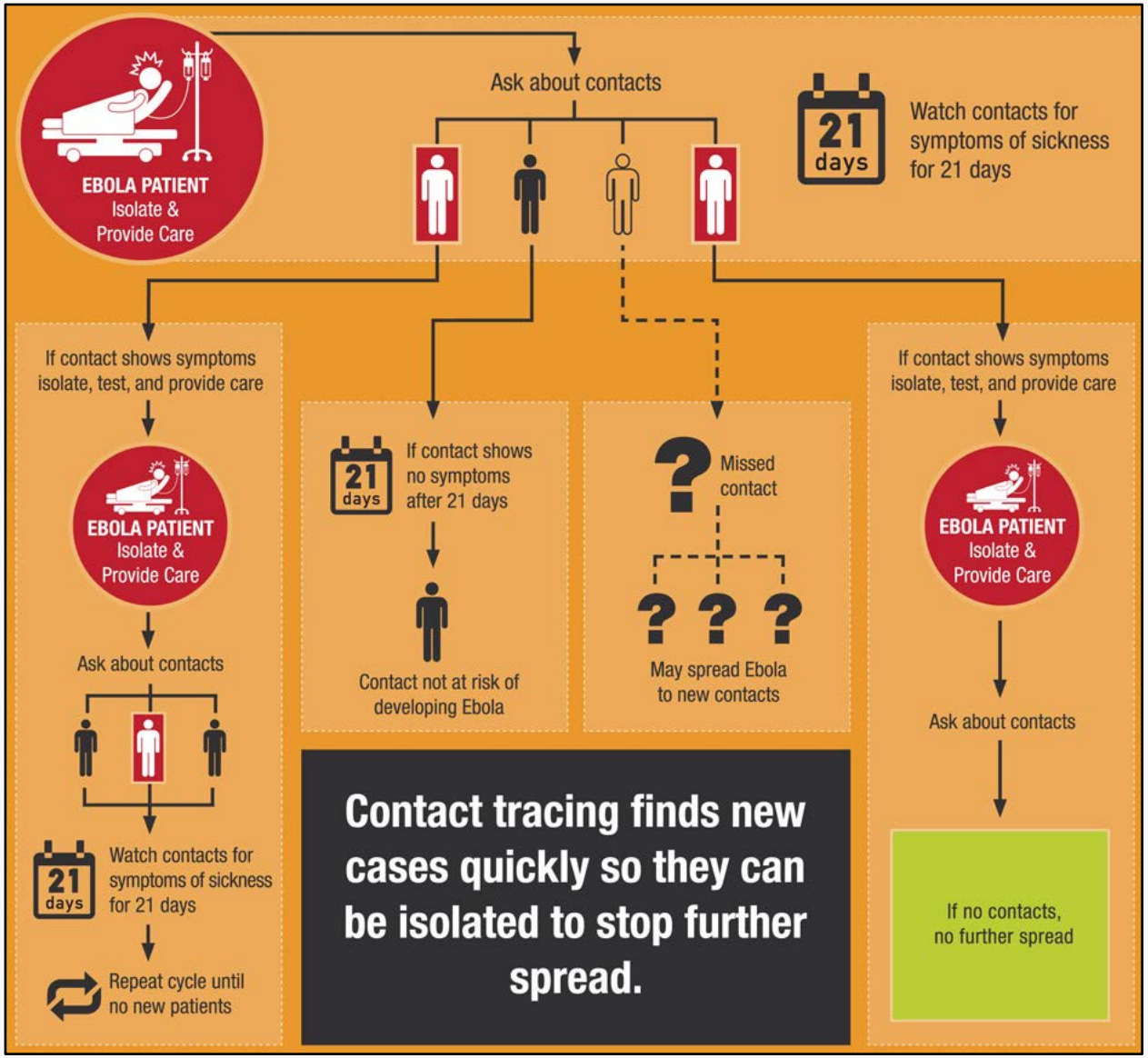
CONTACT TRACING



Source: CDC - http://www.cdc.gov/vhf/ebola/images/contact-tracing.jpg

- Finding everyone who had direct contact with a sick Ebola patient
- Watch for 21 days after last contact occurred

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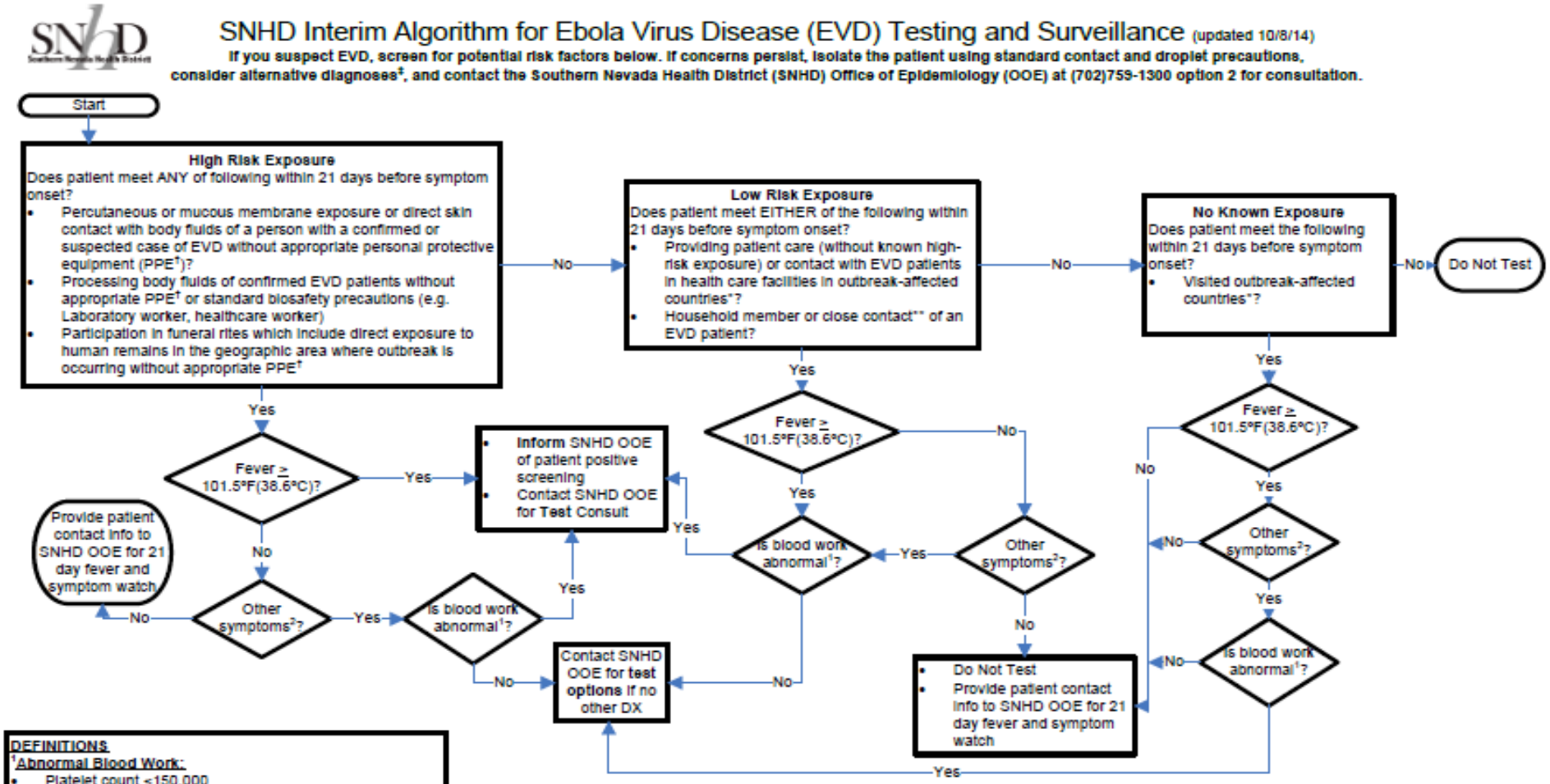
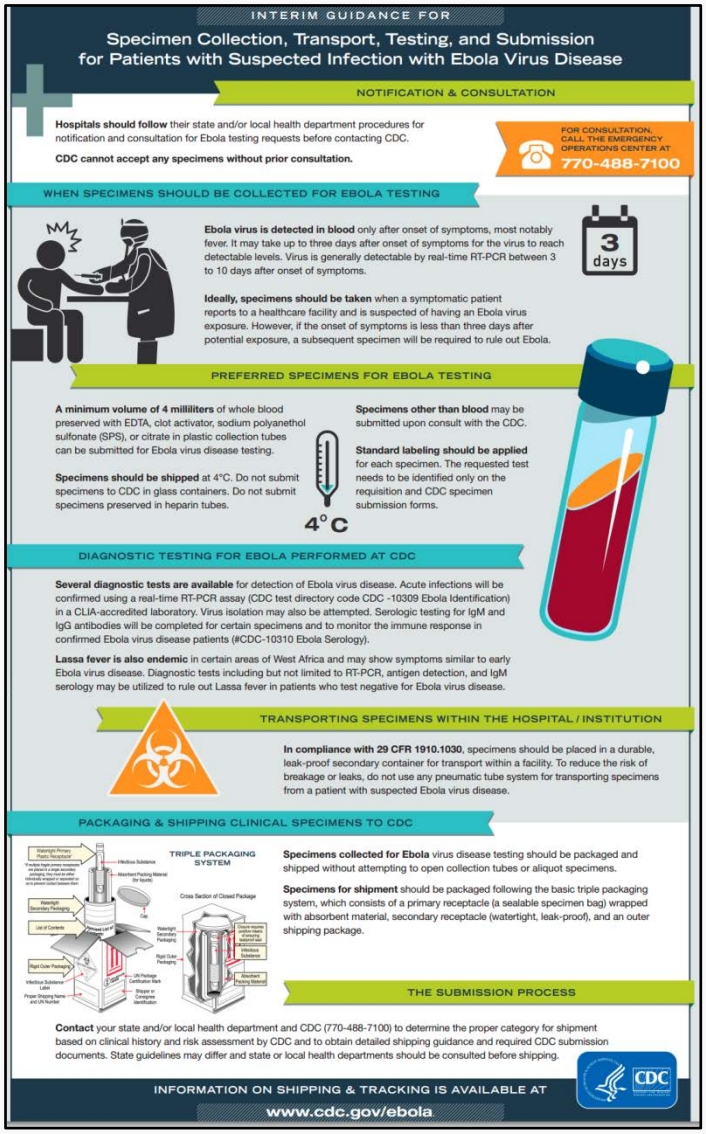
EBOLA VIRUS DISEASE ALGORITHM



LABORATORY TESTING



INTERIM GUIDANCE FOR

Specimen Collection, Transport, Testing, and Submission for Patients with Suspected Infection with Ebola Virus Disease

NOTIFICATION & CONSULTATION

Hospitals should follow their state and/or local health department procedures for notification and consultation for Ebola testing requests before contacting CDC.

CDC cannot accept any specimens without prior consultation.

FOR CONSULTATION, CALL THE EMERGENCY OPERATIONS CENTER AT 770-488-7100

WHEN SPECIMENS SHOULD BE COLLECTED FOR EBOLA TESTING

Ebola virus is detected in blood only after onset of symptoms, most notably fever. It may take up to three days after onset of symptoms for the virus to reach detectable levels. Virus is generally detectable by real-time RT-PCR between 3 to 10 days after onset of symptoms.

3 days

Ideally, specimens should be taken when a symptomatic patient reports to a healthcare facility and is suspected of having an Ebola virus exposure. However, if the onset of symptoms is less than three days after potential exposure, a subsequent specimen will be required to rule out Ebola.

PREFERRED SPECIMENS FOR EBOLA TESTING

A minimum volume of 4 milliliters of whole blood preserved with EDTA, clot activator, sodium polyanethol sulfonate (SPS), or citrate in plastic collection tubes can be submitted for Ebola virus disease testing.

Specimens should be shipped at 4°C. Do not submit specimens to CDC in glass containers. Do not submit specimens preserved in heparin tubes.

4° C

Specimens other than blood may be submitted upon consult with the CDC.

Standard labeling should be applied for each specimen. The requested test needs to be identified only on the requisition and CDC specimen submission forms.

DIAGNOSTIC TESTING FOR EBOLA PERFORMED AT CDC

Several diagnostic tests are available for detection of Ebola virus disease. Acute infections will be confirmed using a real-time RT-PCR assay (CDC test directory code CDC -10309 Ebola Identification) in a CLIA-accredited laboratory. Virus isolation may also be attempted. Serologic testing for IgM and IgG antibodies will be completed for certain specimens and to monitor the immune response in confirmed Ebola virus disease patients (#CDC-10310 Ebola Serology).

Lassa fever is also endemic in certain areas of West Africa and may show symptoms similar to early Ebola virus disease. Diagnostic tests including but not limited to RT-PCR, antigen detection, and IgM serology may be utilized to rule out Lassa fever in patients who test negative for Ebola virus disease.

TRANSPORTING SPECIMENS WITHIN THE HOSPITAL / INSTITUTION

In compliance with 29 CFR 1910.1030, specimens should be placed in a durable, leak-proof secondary container for transport within a facility. To reduce the risk of breakage or leaks, do not use any pneumatic tube system for transporting specimens from a patient with suspected Ebola virus disease.

PACKAGING & SHIPPING CLINICAL SPECIMENS TO CDC

TRIPLE PACKAGING SYSTEM

Specimens collected for Ebola virus disease testing should be packaged and shipped without attempting to open collection tubes or aliquot specimens.

Specimens for shipment should be packaged following the basic triple packaging system, which consists of a primary receptacle (a sealable specimen bag) wrapped with absorbent material, secondary receptacle (watertight, leak-proof), and an outer shipping package.

THE SUBMISSION PROCESS

Contact your state and/or local health department and CDC (770-488-7100) to determine the proper category for shipment based on clinical history and risk assessment by CDC and to obtain detailed shipping guidance and required CDC submission documents. State guidelines may differ and state or local health departments should be consulted before shipping.

INFORMATION ON SHIPPING & TRACKING IS AVAILABLE AT www.cdc.gov/ebola

- Ebola testing is performed at CDC
- Prior consultation with CDC required before samples are submitted for testing

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ENVIRONMENTAL SURVIVAL

- Ebola virus is killed with hospital-grade disinfectants (such as household bleach) and UV
- Ebola virus on surfaces such as doorknobs and countertops can remain infective for several hours
- Ebola virus in body fluids (such as blood) can remain infective up to several days at room temperature

Source: CDC Q&As on Transmission - http://www.cdc.gov/vhf/ebola/transmission/qas.html

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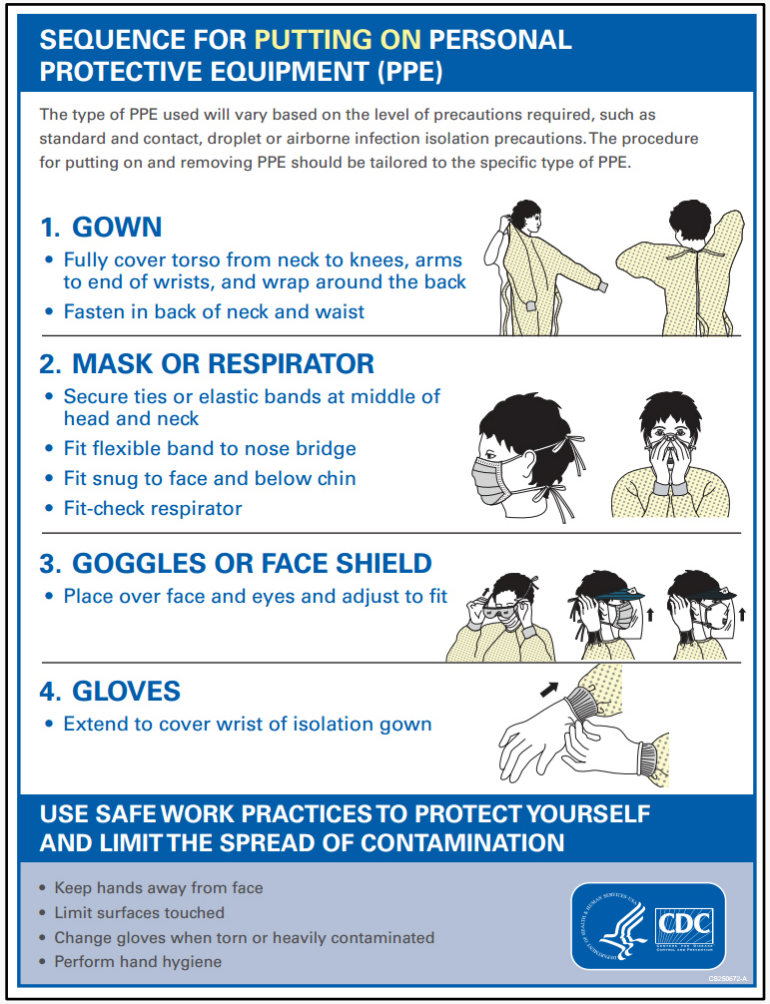
PERSONAL PROTECTIVE EQUIPMENT (PPE) FOR HEALTHCARE WORKERS



Putting it on

- Droplet, standard, and contact precautions are recommended for a patient-care setting where a patient with Ebola is present
- Additional PPE might be required for special situations (e.g. aerosol-generating procedures)

Source: CDC Ebola Infection Prevention Guidance http://www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html

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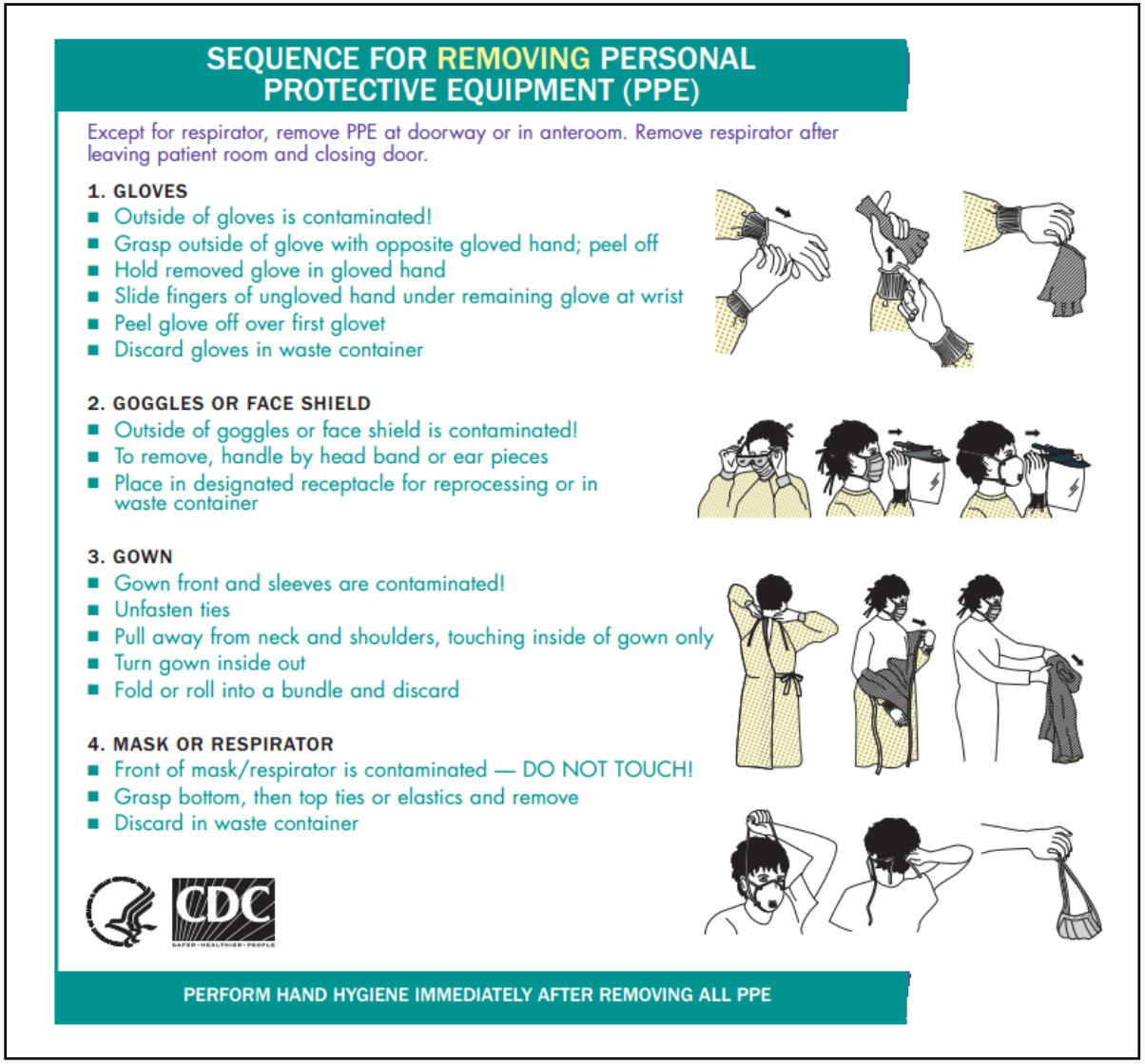
PERSONAL PROTECTIVE EQUIPMENT (PPE) FOR HEALTHCARE WORKERS



Taking it off

- Removal of used PPE needs to be performed carefully and in a specific sequence to avoid exposing the wearer to materials containing Ebola

Source: CDC http://www.cdc.gov/HAI/pdfs/ppe/ppeposter148.pdf

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PPE FOR OTHER (NON-HEALTHCARE) WORKERS

- Use the safety precautions you would normally use when dealing with a potentially sick or bloody person
- Avoid direct contact with the blood or bodily fluids of ill persons

Source: Ebola FAQ for Non-Healthcare Agencies and Businesses in Southern Nevada- http://www.southernnevadahealthdistrict.org/download/Ebola/ebola-faq.pdf

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EMS PREPAREDNESS

- Public Safety Answering Points (9-1-1 Dispatch Centers) are using a screening tool to determine Ebola risk based on travel history and presence of symptoms of Ebola
- EMS crew is notified of any positive screening results

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EMS PREPAREDNESS

- All EMS crews are using the EMS Ebola Screening Tool to ask questions to every patient related to travel history and presence of Ebola symptoms
- If screening responses indicate potential for Ebola, receiving facilities will be pre-notified to allow for safe and efficient transfer of care

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HOSPITAL PREPAREDNESS

- Southern Nevada Healthcare Preparedness Coalition* participation ensures healthcare system integration within community
- Community coordination of information, resources, joint planning, training, and exercises is critical to effective incident management

*MSAC, ED-EMS Leadership Working group, MAB, LEPC, APIC, HS & UAWG

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COMMUNITY PREPAREDNESS

- Clark County Hazard Mitigation Plan and Regional Threat Hazard Identification & Risk Assessment (THIRA) identifies a biological incident as one of top hazards.
- Current plans consider “All-Hazards”
- Joint Training and Exercises

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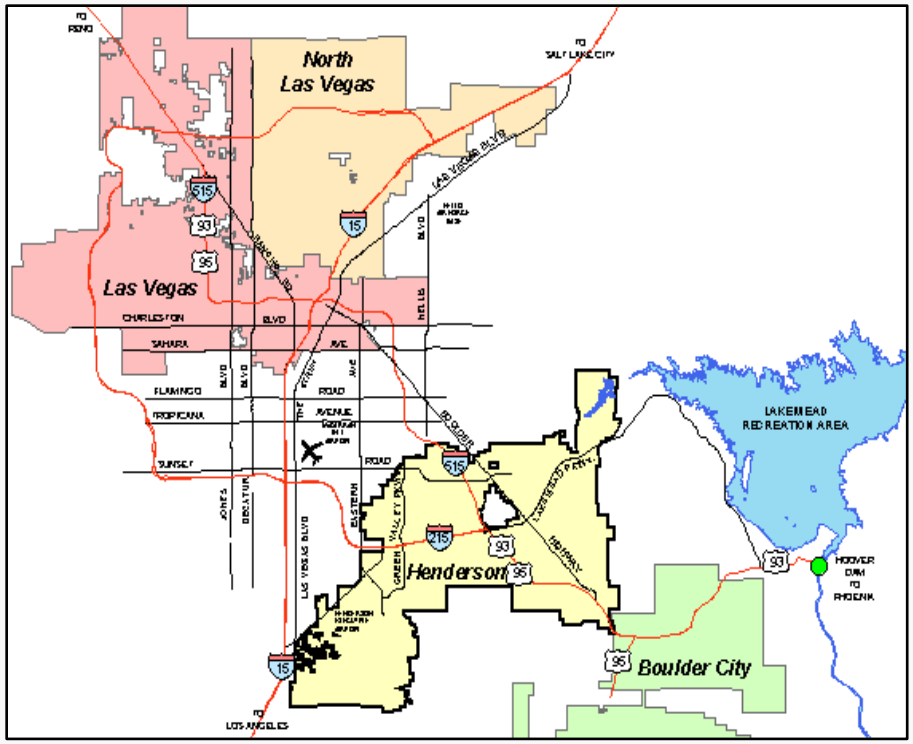
CLARK COUNTY EBOLA VIRUS PLANNING



- High volume visitor destination
- McCarran-no direct flights from Africa
- Over past months SNHD working with hospitals, EMS to prepare for event
- Created protocols for testing, first responders, and monitoring contacts
- McCarran incident response demonstrated plans work

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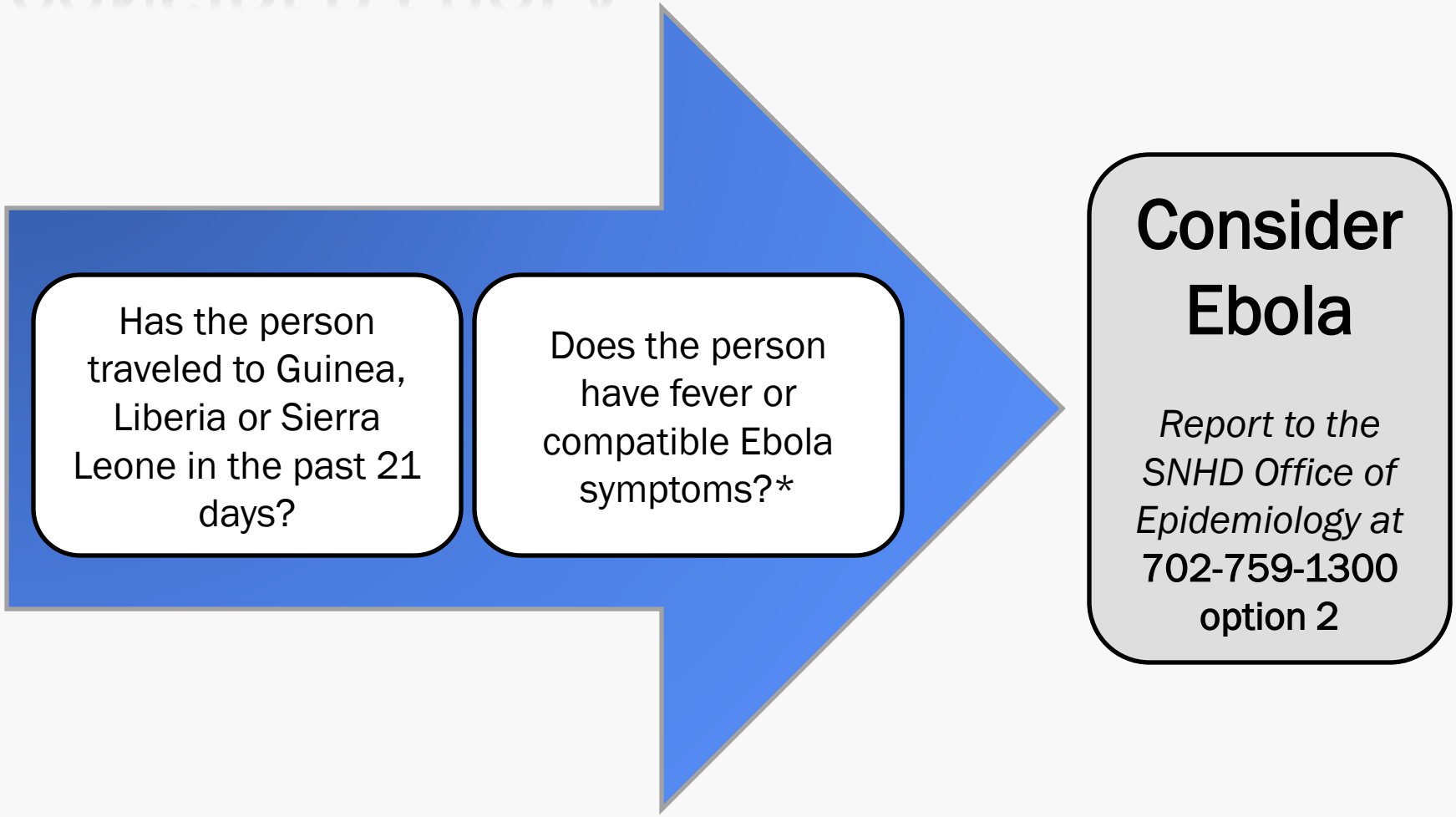
CONSIDER EBOLA



* headache, weakness, muscle pain, vomiting, diarrhea, abdominal pain, or hemorrhage

Source: SNHD Ebola FAQ for Non-Healthcare Agencies and Businesses in Southern Nevada - http://www.southernnevadahealthdistrict.org/download/Ebola/ebola-faq.pdf

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